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ABSTRACT

The Purdue experiment in mass instruction in undergraduate sociology was initiated in the fall of 1967. Lectures are combined with group discussions, and achievement in the course is evaluated mainly by essays written during the semester. Data reported were collected during three successive semesters when minor changes were made in course structure. Scores on the general sociology test indicated that students were learning a satisfactory amount of basic sociology. Questionnaires were used to assess student reactions to essays as the basis of grades, to the discussion meetings, to their assigned tutor (discussion leader) and to the lectures. Associations between these variables were studied, and correlations between over-all course evaluation and other response and personal variables were investigated while controlling on grade, approval of essay system, sex, age and semester in college. Findings were that the over-all evaluation was positive, that modifications in course structure had little effect on student responses, that the general reaction to the course was more strongly associated with reaction to lectures than to other course structure variables, and that freshman students appear to have special difficulties. (EB)

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A CONTINUING EXPERIMENT IN MASS EDUCATION — A PROGRESS REPORT

by

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OFFICE OF EDUCATION

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A CONTINUING EXPERIMENT IN MASS EDUCATION--
A PROGRESS REPORT

Introduction

This paper represents a progress report on an on-going program of research on instruction in undergraduate sociology. The Purdue Experiment in Mass Instruction was inaugurated in the fall of 1967 and has been continued to date. The Experiment is an attempt to satisfy undergraduate needs for personalization, among other things, while maintaining some fairly high level of instructional quality under conditions of mass enrollment. A previous report described the first semester's experience with the course.[1] The current effort describes the major outlines of the instructional program for the past three semesters of the experiment and the responses of the students during that period.

The basic structure of the Experiment in Mass Education is grounded in the current need for very large classes. Introductory sociology at Purdue enrolls approximately one thousand freshmen and sophomores per semester. On the rationale that classes of this size are becoming sufficiently common as to constitute a modal type for early undergraduate experience, at least at state-supported institutions, and that the problems of such instruction are not even clearly understood today, much less well resolved, the Department of Sociology at Purdue has embarked upon a long range program of research on the problems of pedagogy in the introductory course. The fundamental goal of the experiment is the discovery of empirically validated means of

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[1] Reece McGee and Butler Crittenden, "Freshman Sociology at Purdue: An Experiment in Mass Education," Purdue Experiment in Mass Instruction, Bulletin Number 1, Institute for the Study of Social Change, Purdue University.

teaching mass classes with both intellectual satisfaction and efficiency. To this end, students in the course are required to complete a personal history questionnaire at the beginning of each semester and a major course evaluation form at the end of the term. Both questionnaire forms also contain a set of personality scales and a "general sociology" test as a before-after measure of student performance. Additional information, such as SAT scores and records of each student's graded progress, is gathered. This body of data constitutes the basis for assessing changes in the structure and content of the course and for plotting the varying degrees of success of the Experiment.

Basic Format and Semester Modifications

The general structure with which the course was launched in the fall of 1967 has been more or less maintained. Offered in the familiar lecture-discussion style (with two lectures and one discussion per week), the course employs a senior faculty member as lecturer and course co-ordinator and twelve graduate teaching assistants, eleven of whom each meet four discussion sections per week (the twelfth acts as administrative assistant for the course). While there is nothing particularly unique about this format, the basic focus of the course differentiates it from most other introductory programs. Rather than asking students to master facts and data, the goal of this program is to teach students to think analytically using sociological concepts, in other words to understand and use the sociological frame of reference in ways that are meaningful for them. As a result, the conventional testing system of exams and term papers was discarded in favor of a system of evaluation based on brief weekly or biweekly papers which could reflect the kind of learning toward which the course was directed. The topics of these "think pieces" ranged from analyses of personal situations based on particular sets of sociological concepts to analyses and integration of

particular sociological theories. In addition, all attendance requirements were dropped leaving the papers as the primary basis of the grade.

During the first semester of the course, no objective testing of any kind was done and student grades were entirely the result of thirteen weekly, two-page essays. While the students responded quite favorably to this system, it was discovered that, for the majority of them, elimination of all testing meant the consequent elimination of reading. As a result, during the second semester, the number of papers required was reduced to eleven and brief reading quizzes were administered to increase motivation to read the text and other required materials. Format during the third semester of the course changed little, with the exception of a decrease in the number of required papers to nine. In the fourth semester, several changes were initiated in response to requests from a number of sources. Students asked that those regularly attending lecture be "rewarded" for doing so, and the quizzes were expanded somewhat to encompass lecture material. The teaching assistants' request for greater flexibility and autonomy led to a reduction in the number of papers to four, with length expanded to four-to-six pages apiece.

With eleven individuals grading papers, the problem of reliability is, of course, present. During the second semester, a systematic attempt was made to contain the problem by insisting that ten percent of each set of papers be graded by another T.A. and by either the course co-ordinator or the administrative assistant. Because this method seemed to achieve its goal, it was continued during the third semester. During the fourth semester, with a decreased number of papers and increased T.A. autonomy to define the general topic for his students, this method was no longer feasible. However,

final grade distributions were still closely watched, as in the past, to maintain general similarity among the T.A. grade curves.

Student Response to the Program

Some of the changes introduced at different points had clear and immediate effects. After extending the coverage of the quizzes to include lecture material, lecture attendance increased by approximately thirty percent. With the reduction of the number of papers to four, T.A. role satisfaction clearly improved and students seemed to appreciate the decreased performance pressures. And, perhaps as a result of all three changes, the students apparently absorbed more general sociology (the increase in mean number correct on the general sociology test more than doubled that of the previous semester, from 1.9 in the third semester to 5.1 in the fourth).

Other changes are more difficult to evaluate. Some reactions have remained relatively constant, independent of the varying structure and content of the program. Others seem to have been affected by the variations from semester to semester.

The dual goal of the Purdue Experiment to develop a program that is both pedagogically sound while being satisfying for the student provides several difficulties for the evaluation of its progress. Given the nature of the research data, assessing the comparative adequacy of the program as a general learning device is quite difficult. One very tentative measure of the amount of sociology being absorbed by the students is the general sociology test. A comparison of the mean score on the "after" measure of this test with that of another introductory program taught in another large state-supported university using the same text but more conventional

techniques provides some general indication of the relative adequacy of the Purdue program. The mean score for the last semester at Purdue was 25.96 (previous semesters were 22.51, 22.07 and 21.87). The mean score in the other university was 27.95. At Purdue, mean increase between measures was approximately two for the first three semesters and five for the fourth semester. At the other university, it was also approximately two. While this is a very tentative measure, it would suggest that students in the program are absorbing comparable amounts of sociology.

Assessing student response and evaluation of the program is less difficult. A continuing concern of the Experiment has been student satisfaction. As noted earlier, courses of this size and level are stereotypically impersonal, irrelevant and often only something to be endured. The Purdue Experiment was, in part, an attempt to reduce or eliminate such an image. Therefore, the evaluations of the course and various facets of it are of central importance in directing the preliminary phases of the program.

Generally, student response to the course over the past three semesters[2] has been quite positive. Table I indicates that two-thirds to three-quarters of the students like the general basis of the course and prefer to be evaluated on their performance in essays rather than exams. The slight increase in those preferring the essay system over time may reflect the decreasing amount of constant work demanded (eleven two-page papers were

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[2]While the program has been in operation for four full semesters, this paper reports only the last three. During the first semester, we were exploring the kinds of data needed and had not settled on questionnaire forms. Therefore, in some cases the data collected that semester is not comparable or not as extensive as that collected during the following semesters. Therefore, in the tables and discussion, Semester 1 will refer to spring, 1968; Semester 2 to fall, 1968; and Semester 3 to spring, 1969.

required in Semester 1, nine in Semester 2, and four four-page papers in Semester 3). Clearly, students seem to prefer this method.

The discussion sessions (termed "tutorial sessions" because of their emphasis on tutoring the student through the course), in general (Table II), and in particular (Table III), although not rated quite as highly, are for the most part also evaluated positively. Over all three semesters, approximately half of the students saw the discussion sessions as being generally very valuable to them in giving understanding and help. Half also viewed their specific T.A. (termed "tutor") as being of considerable aid in working through the assignments. The slight decrease in high approval in both tables in Semester 2 may reflect several factors including the fact that this semester enrolled a much higher proportion of first semester freshmen than the other two. There were no structural changes that semester except for a decrease in the number of papers. The effect on over-all evaluations, however, was slight.

Table IV indicates the students' reactions to what they perceive to be one of the most important parts of the course, the lecture. Again, approximately half rate it above average. The slight decrease in Semester 2 is equally difficult to explain as lecture and lecture format did not change from Semester 1.

The over-all response to the course as a whole is indicated in Table V. Here, in the students' report of their general reaction to the entire course, the differences become more marked. As indicated in reactions to the tutors and to lecture, Semester 2 was less well liked than the other two, with only a third ranking the course above average. In Semesters 1 and 3, one-half and two-thirds, respectively, ranked it so.

Table I

Evaluation of Essays vs. Exams
By Percents

	Semester 1	Semester 2	Semester 3
Preferred Essays	68.6	69.3	77.8
Indifferent	7.3	6.6	9.2
Preferred Exams	24.0	24.0	12.9
	(N=790)	(N=924)	(N=682)

Table II

Evaluation of Tutorial Sessions
By Percents

	Semester 1	Semester 2	Semester 3
Of Considerable Value	54.0	48.5	59.6
Of Some Value	30.0	35.2	28.2
Of Little or No Value	16.1	16.3	14.9
	(N=790)	(N=924)	(N=682)

Table III

Evaluation of the Assigned Tutor
By Percents

	Semester 1	Semester 2	Semester 3
Of Considerable Aid	52.7	49.5	59.9
Of Some Aid	31.7	33.9	32.3
Of Little or No Aid	16.3	16.6	7.9
	(N=790)	(N=924)	(N=682)

Table IV

Evaluation of the Lecture
By Percents

	Semester 1	Semester 2	Semester 3
Above Average	54.1	46.3	59.8
Average	32.3	36.1	32.3
Below Average	13.7	17.6	7.8
	(N=790)	(N=924)	(N=682)

Table V

Over-all Evaluation of the Course

	Semester 1	Semester 2	Semester 3
Above Average	50.1	36.3	63.0
Average	32.4	39.7	30.5
Below Average	17.5	24.0	6.5
	(N=790)	(N=924)	(N=682)

Table VI

Matrix of Association of Evaluation Items
By Semester--Gammas

		Evaluations				
		Total Course	Lecture	Tutorial System	Tutor	Essay System
Grade	(Semester 1)	.23	.15	.15	.21	.28
	(Semester 2)	.23	.15	.15	.17	.24
	(Semester 3)	.22	.13	.13	.11	.23
Course	(Semester 1)		.68	.38	.43	.56
	(Semester 2)		.59	.28	.41	.54
	(Semester 3)		.66	.37	.37	.41
Lecture	(Semester 1)			.09	.12	.31
	(Semester 2)			.03	.11	.16
	(Semester 3)			.06	.07	.17
Tutorial System	(Semester 1)				.82	.28
	(Semester 2)				.81	.23
	(Semester 3)				.88	.27
Tutor	(Semester 1)					.28
	(Semester 2)					.22
	(Semester 3)					.22

The set of reactions noted above suggest that the various evaluation measures may be highly interdependent, that reactions to one facet of the course may strongly effect others. Table VI presents an attempt to explore this possibility. This matrix of gammas indicates the association between the dependent variables. Interestingly, in all three semesters, grade is not strongly related to any of the measures and only very mildly associated with general evaluation of the course and approval of the essay system. The hypothesis of interdependence is only partially supported, however, by noting the rather strong to moderate associations found between the over-all

course rating and the other four basic evaluation items. Over all three semesters, total evaluation of the course is rather strongly associated with evaluation of the lecture and preference for the essay system and moderately associated with both general and specific response to the tutors and the tutorial system. A comparison across semesters reveals remarkable consistency with little marked variation. Except for the relationships of general course evaluation with other responses noted above, there are only weak associations between the remaining variables. The major exception to this is the logically strong relationship between evaluation of the tutorial system and evaluation of the specific tutor. Further, there is some association between preference for the essay system and the other evaluations, again a logical finding.

Clearly, then, for the purpose of evaluating the success or failure of the program, over-all rating of the course is, fundamentally, the most important dependent variable. It is the relationship of this variable with the others that has dominated the research interests up to this point. An example of some of the information resulting from this interest is indicated in Table VII. Using only data from this past semester, Semester 3 on the previous tables, associations between over-all course evaluation and other response and personal variables are probed by controlling on several variables thought to have some significance in course acceptance. While it is impossible in the course of this presentation to attempt to explain every discrepancy, some of the consistencies as well as the deviations are worthy of note.

Table VII

Over-all Course Evaluation by Other Evaluation and Background Variables, Controlling by Grade, Essay System Approval, Sex, Age, and Semester in College--Gammas (except where indicated otherwise)

	Controls				
Course Evaluation X	Grade (1) D-F (2) C (3) B (4) A	Essay System Approval (1) Prefer Essays (2) Indifferent (3) Prefer Exams	Sex (1) Male (2) Female	Age (1) 18 or Lower (2) 19 (3) 20+	Semester (1) First (2) Second (3) Third (4) Fourth
Grade		(1) .22 (2) .10 (3) .04	(1) .16 (2) .27	(1) .23 (2) .21 (3) .22	(1) .23 (2) .17 (3) .14 (4) .30
Evaluation of Lecture	(1) .64 (2) .65 (3) .60 (4) .61	(1) .65 (2) .85 (3) .51	(1) .65 (2) .68	(1) .62 (2) .74 (3) .55	(1) .59 (2) .69 (3) .68 (4) .66
Evaluation of Tutorial System	(1) .31 (2) .42 (3) .09 (4) .47	(1) .31 (2) .43 (3) .47	(1) .37 (2) .37	(1) .27 (2) .41 (3) .47	(1) -.12 (2) .46 (3) .43 (4) .43
Evaluation of Tutor	(1) .43 (2) .43 (3) .12 (4) .28	(1) .37 (2) .28 (3) .31	(1) .38 (2) .36	(1) .16 (2) .52 (3) .40	(1) .00 (2) .43 (3) .49 (4) .41
Specific Tutor (Leik's J)	(1) .17 (2) .11 (3) .00 (4) .10	(1) .00 (2) .25 (3) .13	(1) .04 (2) .01	(1) .04 (2) .01 (3) .04	(1) .06 (2) .05 (3) .28 (4) .01
Evaluation of Essay System	(1) .11 (2) .45 (3) .46 (4) .27		(1) .45 (2) .47	(1) .47 (2) .42 (3) .46	(1) .50 (2) .41 (3) .23 (4) .58
Semester in College	(1) .11 (2) -.06 (3) .11 (4) -.14	(1) -.10 (2) -.13 (3) .10	(1) -. (2) -.	(1) .00 (2) -.15 (3) -.12	
Age	(1) .00 (2) .06 (3) .32 (4) .13	(1) .01 (2) -.32 (3) .26	(1) (2)		(1) .23 (2) .05 (3) .00 (4) .01
Sex	(1) -.03 (2) .16 (3) -.19 (4) .01	(1) -.01 (2) .35 (3) .04		(1) .01 (2) .00 (3) .05	(1) -.13 (2) .07 (3) -.31 (4) .08

In controlling for final grade in the course, several points emerge. Refreshingly, grade seems to have little to do with the evaluation items. It is not necessarily those who obtain high grades who like the course. This is especially important as it suggests that the students are making their evaluations independent of grade since most of them know what grade they will receive at the time that evaluations are made. Surprisingly, the B students most deviate from the pattern. This category shows weaker associations between general course approval and specific and general evaluations of the tutor as well as with the specific tutor himself. For this group alone, the tutor and tutorial system appear to have little to do with general course response. Further, this group is also atypical in the relationship between age and total course reaction in that only in this group is there any solid association between these variables. Preference for the essay system is most strongly associated with over-all course evaluation among the middle-range students, the B's and C's, suggesting that, among these students, approval of the system will be an important factor in determining success within it. It seems likely that the most successful would excell under any teaching system, and therefore find the matter irrelevant, while for the least successful, system approval is not sufficient cause for achievement.

Even more interesting are the results obtained by controlling for system approval. Grade is more strongly related to general course response among those who prefer the essay system than among those who do not. In this instance, it is impossible to determine whether those who liked the system performed more successfully within it or vice versa. The interpretation above would suggest that the former is more accurate, at least among

the B and C students. Association between course rating and evaluation of lecture and course rating and tutor (not the evaluation of the tutor but specifically which tutor he had) is strongest among those who have no particular preference for essays or exams reflecting perhaps that lecture and specific tutor become central in effecting the response to the course when there is no preference for the system. Further, evaluation of the tutor is slightly less related to course evaluation among this group, suggesting that it is not perceived aid of the tutor that is important to course evaluation but the tutor himself. In this same group, males appear to be more likely to like the course, while there is no relationship among those who prefer one system over the other.

Initially, it was expected that sex would make a difference in the evaluations of the course, as females are thought to be more verbally skilled. Controls on sex, however, produced virtually no differences on any of the items, a fact that is itself significant.

Controls on age and semester in college (i.e., number of semesters the student has completed in college, including the present one) are somewhat difficult to evaluate because the two are so confounded. Semester by overall course response controlled by age indicated that for those 18 or younger, semester made no difference whatsoever in approval of the course while there was a slight negative association for those older (i.e., the more advanced in school, the more they liked the course). In controls on semester, for first semester students, the older the students, the more they were likely to approve of the course while the relationship vanished for those in the second semester or more. Together these findings would suggest that for first semester students, increased age will effect course approval while for

more advanced students semester standing is slightly more important than age. Age and semester controls also uncover the fact that for younger, and even more, for first semester students, both specific and general evaluations of the tutorial system is much less associated with over-all response to the course than among those older or more advanced. In other words, whether first semester students like the tutorial system has little to do with whether they like the course, while for the academically more mature such response has quite a bit to do with course approval.

Summary

While it seems evident that students for the most part prefer this method of teaching over more conventional methods and, in general, like the course, there is a long way to go before the dynamics of their response may be understood. Reaction to the course does not appear to be strongly affected by structural changes. Relatively speaking, the majority of students appear to like the approach almost regardless of modification. What does appear to make some difference is the students' orientation to the essay system as well as independent variables like age and semester in school.

It could be suggested that Hawthorne effect may be operating. The students are aware of the general focus and direction of the course as well as its goals. Thus, this may present a very general positive pre-set among them. However, the students themselves do not experience change; no changes have been introduced in the middle of a semester. The students may have heard of changes that have been made from semester to semester but they, themselves, are not manipulated. Therefore, while there may be some Hawthorne effect operative, we do not feel that it explains observed course approval.

While the results of only a few of the analyses are reported here, like most sociological research, each table and matrix suggests several avenues of additional analyses. However, several tentative conclusions can be drawn from the information presented. First, the general evaluations would indicate that it is possible to implement a program of mass instruction that the majority of students would find relatively satisfactory without sacrificing quality in transmission of sociology. Second, given the structure employed, minor modifications in the system itself have little effect on the student response to the program. Student response seems to be affected most significantly by other-than-structural variables. Third, of the structural variables, reaction to the course is most strongly associated with reaction to lecture, regardless of the degree to which this aspect is underplayed. This is especially surprising in light of the unexpectedly weaker association between evaluation of the essay system, the very basis of the program, and general course rating. Finally, given the structure involved, first semester students represent a problematic group with difficulties apparently unshared by their more advanced colleagues.